Caglar Bozkurt, Mihriay Musa, Senol Yanar, Mehmet Bayansalduz, Abdurrahman Kepoglu, Taner Bahsi. The effect of music on psychological strength, physical strength and performance and motivation in sportive practices. Acta Scientiae et Intellectus, 8(1); 2022, 14-39.

THE EFFECT OF MUSIC ON PSYCHOLOGICAL STRENGTH, PHYSICAL STRENGTH, AND PERFORMANCE AND MOTIVATION IN SPORTIVE PRACTICES

Caglar Bozkurt[1], Mihriay Musa[2], Senol Yanar[1], Mehmet Bayansalduz[1], Abdurrahman Kepoglu[1], Taner Bahsi[3]

[1]Dokuz Eylul University, Necat Hepkon Faculty of Sports Sciences, Izmir,
[2]Usak University, Faculty of Sports Sciences, Usak,
[3]Malatya Provincial Security Directorate, Malatya, ***TURKEY***

Corresponding author: mihriay.musa@usak.edu.tr

ABSTRACT

This research was conducted to evaluate the effects of listening to music in sportive practices on psychological resilience, physical strength, and performance and motivation levels before, during, and after the sportive practice. The research was conducted with the general screening model, one of the quantitative research designs. The universe of the study consists of students studying at the Faculty of Sports Sciences of Dokuz Eylul University. The sample of the study, in which the convenience sampling method, which is one of the nonprobability sampling methods, was used, consists of 202 students in total, 102 male and 100 female. Summarizing literature reviews and conceptual models have hypothesized the potential benefits and salient mechanisms associated with listening to music in sporting practices, although a large-scale objective summary of the literature has not been provided. The study data were obtained by using the scale of the effect of music in sportive practices. Kolmogorov-Smirnova and Shapiro-Wilk normality tests at a significance level of 0.05 were used to determine whether the obtained data were normally distributed. As a result of the test, it was determined that the data did not show normal distribution ($p<0.05$) at the significance level. For this reason, the Mann-Whitney-U test, Kruskal Wallis Test, and Friedman Test were used at the 0.05 significance level, which are nonparametric test statistics. As a result of the research, it was determined that the music that individuals listened to before, during, and after

the sportive practice had a positive effect on the psychological resilience, physical strength, and performance, and motivation levels of the individuals (p<0.005).

Keywords: *Music, Sports, Sportive Performance, Psychological Resilience, Physical Strength, Motivation*

INTRODUCTION

Humans go through various stages from birth to death, grow and develop. As a result of the similarities between the rhythm and human movement in music, the simultaneity between these two is used and it is stated that this is an indicator of the harmony between music and exercise. Studies have shown that the relationship between rhythmic character and physical skills is effective in perceiving the environment and increasing motor skills. It has been determined that Turkish-Islamic scholars and physicians Farabi, Er-Razi, and Ibn Sina used music as well as medicine in the treatment of mental illnesses, and the treatment methods of these scholars continued to be used in the Ottoman period as well. Studies on music therapy continue in both Europe and the United States. Current research shows that music has productive effects on exercise and relaxation. In our study, it will be tried to reveal the effect of listening to music in sportive practices of Faculty of Sports Sciences students on psychological resilience, Physical Strength and Performance, and Motivation before, during, and after sports practice.

One of the factors known to be effective on the psychological, physiological, and emotional development of the individual is music. It is stated that music is also effective in cognitive and social development processes (Ozdemir & Yildiz, 2010). They stated that music has been effective since the first stages of human life, that the sounds heard before birth and all-natural and artificial sounds perceived afterward create a sound perception separately, and that all these sounds are related to music when considered in detail (Zembat et. al., 2010). Music is a communication tool and social activity that brings people together in special areas such as performers, listeners, dancers, and allows people to express themselves; It has also been explained that, as a social being, a person creates music by adding meanings that reveal his feelings, experiences, and thoughts with the help of musical sounds to the language he has put forward to communicate with his environment, and communication has started to occur since these meanings are shared with other people (Baydag & Malkoc, 2013).

The concept of "music" has been defined in various ways by the Turkish Language Association in terms of different fields. According to the Turkish Language Association, three different definitions have been made: "The art of conveying certain feelings and thoughts with regular sounds within certain

rules,''The art of conveying feelings and thoughts in various ways, either in a single or polyphonic voice; singing or stealing works that have been put forward in this way,' and as 'universal cultural index consisting of rhymed-non-rhymed, metered-non-measured, regular-irregular voice, verbal voice, the sounds of natural or artificial objects that people use to meet their social, religious, magical, sensory, intellectual and sexual needs' (Turkish Language Institution, 2019). According to Plato, music is defined as "the language of God", while according to Weber it is "the language of the human soul". Beethoven, who is also a very important musician, expressed the concept of music as a "divine art" (Ucan, 1994). It has been stated that music is a phenomenon that has a wide variety of functionality in human life from a social point of view. It has been explained that for people of all ages, genders, and cultures, music can be considered primarily as communication, emotional sharing, entertainment, and cultural resource (Artemiz, 2009). It has been explained that music has had a place in the lives of human societies since ancient times, and it was stated that spiritual healing is among the oldest fields in which it is applied (Erten, 2011). It has been explained that the lute or instrument used in Central Asia was used as an important tool called good spirits and igniting evil spirits (Gencel, 2006). Turks as a community with music within the Central Asian Turkish culture in the earliest BC. It was announced that he had a relationship around 1700. Musical instruments began to be seen in the Turks around 1134 B.C. and it was stated that the names of these percussions, stringed and wind instruments used in war and worship areas later changed into the languages of other nations. It is stated that the great Turkish-Islamic scholars and physicians Farabi, Er-Razi, and Ibn Sina used music as well as medicine in the treatment of mental illnesses, and the treatment methods of these scholars continued to be used in the Ottoman period (Somakci, 2003). It has been stated that mental illnesses are treated with music in an institutionalized way in Turkish-Islamic culture. Studies on music therapy continue both in Europe and the United States. In 1990, it was announced that the European Music Therapy Confederation was established. In the United States, it was stated that the American Music Therapy Association was established in 1977. It has been announced that these institutions are active today (Isikci, 2018). It has been stated that some tribes in the African continent preserve their old traditions and lifestyles and they use music to treat various diseases (Guvenc, 1985). It was announced that art and psychopathology and music therapy studies continued in the psychiatry clinic of Istanbul Medical Faculty and then in Cerrahpasa Medical Faculty in the Republican period. It was stated that the first music therapy unit was established within the Music Therapy Association in Ankara in 2015 and Anadolu University in 2017 (Goktepe, 2018).

In our literature review on the effects of music on people, it has been observed that the subject has been researched in different disciplines and the positive effect of music has been determined in general.

The Effect of Music in Sportive practices

The newest idea about athletes and sports is the idea of utilizing musical memory for performance enhancement and relaxation. Current research shows that music has productive effects on exercise and relaxation. Calming down with music is a frequently used way (Erdal, 2005). As a result of the similarities between rhythm and human movement in music; By making use of the simultaneity between these two, it was stated that this situation is an indicator of the harmony between music and exercise. Studies have shown that the relationship between rhythmic character and physical skills is effective in perceiving the environment and increasing motor skills. These findings support the findings of research in the fields of gymnastics and swimming by Chan (1985), Dernbery (1981) (Erdal, 2005). Another study on the effect of music on bodily performance was done by (Dogan, 1998). In the study, the effect of background music on productivity in flexibility studies was analyzed. Forty randomly selected primary school students were divided into two groups and the effects of the studies with and without music were analyzed for 10 weeks. As an expected result, as a result of this study, the flexibility rate was determined to be higher in the group that performed flexibility exercises accompanied by background music. Marris and Arshel (1978) investigated the effect of the music listened to while riding a bicycle on pedaling, they did light training with light rhythm music and hard training with music with strong rhythm, and they obtained similar results. Past research on the effects of music on exercise has revealed that exercise improves the condition of the cardiovascular system when accompanied by a musical rhythm, and the presence of music facilitates the learning of certain motor movements (Blažević et. al.,, 2015). Sime (2000) studied the conditioning of nerve conduction velocities in basketball and golf synchronously with rhythm based on time in music in his research to assist athletes in finding the best performance. In this research, the effect of music on nerve conduction velocities was used in reaching the target by finding the optimum concentration level. In a study conducted by Meeks Herdegen (2002), simultaneous motivation was increased by dividing the selected music by the duration of weight lifting. To increase the motivation period, music was used for a longer time and positive results were obtained. Kloubec investigated the effects of 12-week pilates training on flexibility, musculoskeletal, balance, and posture in fifty healthy cases. At the end of this study, they found that flexibility and muscular endurance can be improved with Pilates exercises that do not require any special materials or high-level skills and

can be easily used in one's routine exercises (Kloubec, 2010). Music was used in the experiments for submaximal anaerobic training, which requires maintaining endurance and high performance. The effects of music on anaerobic exercise have been investigated. It has been determined that music increases performance and provides great recovery during anaerobic exercise (Erdal, 2005).

The Effect of Music on Psychological Resilience in Sportive practices

The capacity of human beings to cope with difficulties, overcome and become stronger is expressed as psychological resilience. Resilience is the process of effectively negotiating, adapting to, or managing significant sources of stress or trauma (Bingol and Bayansalduz (2016). Psychological resilience is having effective coping skills. This phrase refers to efforts to restore or maintain internal or external balance through human activities, including critically threatened thought and action (Masten, Best, & Garmezy, 1990). Most definitions of resilience in the literature contain two elements. First, exposure to adverse or traumatic conditions; the second is a successful adaptation after exposure (Miljević-Riđički, Plantak, & Bouillet, 2017). According to the Greek philosopher Plato (427-348 BC), "Music is an art that calms the human soul, musical education elevates people and maintains order." Plato states that the most effective tool that can be applied in the education of the soul is music. The Chinese philosopher Confucius (571-479 BC) says: "If life brings suffering and sorrow, seek tranquility in music. Music is a harmony between the sky and the earth" (Belgin, 2014). On the other hand, Ibn Sina (980-1037) stated his thoughts on music as "One of the best and most effective ways of treatment is to increase the mental and spiritual powers of the patient, to encourage him to fight the disease better, to make him listen to the best music, to bring him together with the people he loves" (Ekici, 2014; Guvenc, 2014). No matter the type of music, any kind of music can help us reduce our stress level (Maryland Medical Center, 2008). Marshall and Tomcala (1981) comparatively examined the effects of different types of music on stress and had the subjects listen to pieces consisting of jazz, rock, religious, classical music, and background music. As a result, it was observed that the stress levels of the subjects who were listened to different music decreased at the same rate. Knight and Rickard (2001) observed that listening to calming music reduces the level of anxiety. Music has a positive effect on hormones such as serotonin, dopamine, adrenaline, testosterone, which have an effect on the formation of mental illnesses and regulate the emotional state of people; It has been observed that it regulates physiological functions such as blood pressure and respiratory rhythm and provides the balance of oxygen and blood supply in the brain (Brotons and Koger 2000, Ridder and Gummesen 2015, cited in Lok and Bademli, 2016).

The Effect of Music on Physical Strength and Performance in Sportive practices

Man is not only a physical and physiological being but also a living being with psychological, sociological, and cultural characteristics. For this reason, the mental and emotional state of the athlete in sportive practices is closely related to his performance. Today, performance in sports is defined as the physiological, biomechanical, and psychological efficiency of the athlete during the activity. Achieving an optimal and superior performance depends on the development of both the psychological and physiological abilities of the athlete and increasing them to a certain level in accordance with the purpose (Karharman and Bayansalduz, 2020). Although music and sports are phenomena that we encounter in every field of life, they are intertwined with each other. Music, which is indispensable for both recreational sports and athletes, has critical importance in important sports events such as Olympic openings and closings (Stevens and Lane, 2001). One of the newest ideas in sports is the idea of using musical memory for performance enhancement and relaxation. Music is used by many athletes as a "mood-setting" strategy. In addition, music reduces the excitement levels of athletes while performing, making them feel more secure (Wilson & Aiken, 1977).

It has been observed that the majority of fitness centers are equipped with high-capacity sound (music) systems, and it has become natural for us to come across joggers while listening to music with a walkman (Koc, Curtseit and Mamak, 2011). Music, which has a small but significant effect on performance in competitions, provides an ideal effect in training. Scientific research has revealed five important factors that affect the preparation and competition performances of music. These are differentiation, arousal adjustment, synchronization, acquisition of motor skills, and emotional dominance (Szmedra & Bacharach, 1998). Movement coordination development theory suggests that some types of rhythmic music will improve, increase or improve gross motor (movement) functions, thus increasing exercise performance. The idea in the relaxation enhancement hypothesis is that by-product molecules such as acidosis from high levels of exercise and high hormones that cause fatigue can be somewhat reduced by music, enhancing performance. According to the fatigue reduction hypothesis, music is felt to prevent the exerciser from concentrating on certain feelings of physical fatigue. It has been suggested that this mechanism is much more effective at lower exercise intensities. At higher intensities, the internal fatigue symptoms of the body have a greater effect than the effect of music on the feeling of fatigue (Karageorghis and Terry, 1997).

The Effect of Music on Motivation in Sportive practices

The activities people choose to depend on their motivation and level of motivation. Yalcin (1991) defines motivation as "the factor that directs individuals to certain behaviors in certain situations, that is, the 'behavioral motivation'; Kucukahmet et. al., (2003) define it as "a bundle of internal and external originating impulses, desires and desires that influence, direct, strengthen and control human behavior". Goleman (1998), on the other hand, used the expressions "Emotional tendencies that enable or facilitate reaching goals" for motivation. The issues stated in the definitions appear as the "willingness to work" and "desire to achieve success with music" in music individuals. Motivation is one of the most important power sources that determines the direction, severity, and determination of individuals' behaviors. There are important differences between motivated and unmotivated individual behaviors. Motivated behavior has a clear direction, it is done with great energy. There is determination, continuity, and persistence in movements. Motivation is the factor that enlivens our behaviors, adds color, directs them, and controls them for a purpose (Kucukahmet et. al., 2003). All these factors are vital for the continuity and success of musical individuals. It is obvious that in motivated individuals, music is more lively, colorful and they work for a common goal. It is clear that an individual who is willing to make an effort and spend the necessary time to work, who is persistent and determined to reach the result, and who has high interest and attention, will be more successful. Music is important in terms of motivation for individuals, both the dynamics of the individual and the quality of the music they produce.

Karaegeorghis et al., (1997) determined that the melodic and harmonic harmony of music ensures that the athlete is energetic. Music, which consists of the socio-cultural background and preferences of the athlete, also improves the positive mood. This idea reveals that music affects physical activity in society through physical work. In the study conducted by Meeks and Herdegen (2002), simultaneous motivation was increased by dividing the selected music by the duration of the weight lifting in weight lifting. To increase the motivation period, music was used for a longer time and positive results were obtained. When the results of the studies are examined, it has been determined that the use of music by the athletes in exercise affects the athletes positively in terms of self-worth, self-confidence, focusing on the subject, and exercising more (Mavi, 2012). Based on these studies, we think that music and sports are intertwined. The main purpose of our study is to determine how effective music is in sportive practices.

METHOD

This research was conducted in the scanning model. Survey models are a research method designed to examine the past or the present in the sample group selected from the universe containing large groups. (Karasar, 1999). The universe of the study consists of students studying at the Faculty of Sports Sciences of Dokuz Eylul University. The sample of the study consists of 202 students, 102 male, and 100 female. As a data collection tool in the study; The "Personal Information Form" prepared by the researchers and the Impact of Music on Sportive Practices Scale (IMSPS) developed by Karayol and Turhan (2020) were used. The scale consists of 18 items in total. In the scale consisting of three sub-dimensions as Psychological Strength, Physical Strength, and Performance and Motivation, the participants expressed their opinions in the trial form with the options Before, During, and After the Sportive Practice. It is scored as a 5-point Likert type ranging from "strongly disagree", "disagree", "undecided", "agree", and "strongly agree". The stages of determining the features to be tested on the scale used in the research, writing the items to be included in the scale, taking expert opinion and rearranging the items, performing the validity and reliability analyzes by applying the scale were followed (Cronbach, 1984; Altun & Buyukozturk, 2011). In our study, Kolmogorov-Smirnova and Shapiro-Wilk normality tests were applied at a significance level of 0.05 to determine whether the data were normally distributed. As a result of the test, it was determined that the data did not show normal distribution ($p<0.05$) at the significance level. For this reason, the Mann-Whitney-U test, Kruskal Wallis Test, and Friedman Test, which are nonparametric test statistics at 0.05 significance level, were used. In our study, although there were 20 kinds of sports branches that individuals did, 5 branches (fitness, volleyball, swimming, tennis, and football) with 12 or more frequencies were used in the analysis.

FINDINGS

The data obtained from the research are analyzed and given below.

Table 1. *Descriptive Statistics on Variables*

Gender of the Individuals		Frequency	%
	Male	102	50,5
	Female	100	49,5
	Total	202	100
Age of the Individuals		Frequency	%
	15-20 Age	75	37,1
	21-24 Age	63	31,2

	25-32 Age	64	31,7
	Total	202	100
Sports Branches of the Individuals		Frequency	%
	Handball	6	3
	Judo	1	0,5
	Fitness	12	5,9
	Volleyball	40	19,8
	Swimming	30	14,9
	Tennis	12	5,9
	Football	48	23,8
	Basketball	20	9,9
	Pilates	4	2
	Ping Pong	2	1
	Yoga	1	0,5
	Kickbox	2	1
	Athletics	10	5
	Muaythai	1	0,5
	Badminton	4	2
	Powerlifting	1	0,5
	Boxing	1	0,5
	Taekwondo	2	1
	Folk Dances	2	1
	Wrestling	3	1,5
	Total	202	100
Sports Ages of the Individuals		Frequency	%
	1-3 Years	132	65,3
	4-6 Years	70	34,7
	Total	202	100
Individuals' Listening to MusicFrequency		Frequency	%
	Alwas	134	66,3
	Sometimes	62	30,7
	Rarely	6	3
	Total	202	100
Music Genres Listened by the Individuals		Frequency	%
	Rap	57	28,2
	Rock	27	13,4
	Pop	45	22,3
	Jazz	7	3,5
	Turkish Classical Music	10	5
	Arabesque	23	11,4
	Alternative Music	33	16,3
	Total	202	100

As seen in Table 1, 50.5% of the individuals participating in the study were male and 49.5% were female. Considering the age ranges, they are 15-20 years old (37.1%), 21-24 years old (31.2%), 25-32 years old (31.7%).The sports branches that individuals are interested in are handball (3%), judo (0.5%), fitness (5.9%), volleyball (19.8%), swimming (19.8%), tennis (5.9%), football (23.8%), basketball (9.9%), pilates (2%), table tennis (1%), yoga (0.5%), kickbox (1%), athletics (5%), muaythai (0.5%), badminton (2%), powerlifting (0.5%), boxing (0.5%), taekwondo (1%), folk dances (1%), wrestling (1.5%). Sports ages of individuals are between

1-3 years (63.5%) and between 4-6 years (34.7%). The frequency of listening to music of individuals is always (66.3%), sometimes (30.7%), rarely (3%).The type of music that individuals listen to is rap (28.2%), rock (13.4%), pop (22.3%), jazz (3.5%), Turkish art music (5%), arabesque (11.4%), and alternative music (16.3%).

Table 2. *Data Normality Test*

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
BSP Total	0,153	202	0,000	0,88	202	0,000
BSPpsychological resilience	0,154	202	0,000	0,877	202	0,000
BSPphysical strength and performance	0,159	202	0,000	0,873	202	0,000
BSPMotivation	0,179	202	0,000	0,843	202	0,000
DSPTotal	0,159	202	0,000	0,867	202	0,000
DSPpsychological resilience	0,154	202	0,000	0,877	202	0,000
DSPphysical strength and performance	0,168	202	0,000	0,859	202	0,000
DSPMotivation	0,19	202	0,000	0,825	202	0,000
ASPTotal	0,14	202	0,000	0,895	202	0,000
ASPpsychological resilience	0,148	202	0,000	0,887	202	0,000
ASPphysical strength and performance	0,144	202	0,000	0,892	202	0,000
ASPMotivation	0,16	202	0,000	0,871	202	0,000

a Lilliefors Significance Correction
The data did not show a normal distribution (p<0,05)

Table 2. *Data Normality Test*

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
BSP Total	0,153	202	0,000	0,88	202	0,000
BSPpsychological resilience	0,154	202	0,000	0,877	202	0,000
BSPphysical strength and performance	0,159	202	0,000	0,873	202	0,000
BSPMotivation	0,179	202	0,000	0,843	202	0,000
DSP Total	0,159	202	0,000	0,867	202	0,000
DSPpsychological resilience	0,154	202	0,000	0,877	202	0,000
DSPphysical strength and performance	0,168	202	0,000	0,859	202	0,000
DSPMot	0,19	202	0,000	0,825	202	0,000
ASP Total	0,14	202	0,000	0,895	202	0,000
ASPpsychological resilience	0,148	202	0,000	0,887	202	0,000
ASPphysical strength and performance	0,144	202	0,000	0,892	202	0,000
ASPMotivation	0,16	202	0,000	0,871	202	0,000

a Lilliefors Significance Correction
The data did not show a normal distribution (p<0,05)

Table 3. *The Effect Levels of Music in Sportive practices of Individuals*

	N	Minimum	Maximum	Mean	Std. Deviation
Total Score Before Sportive Practice	202	19	90	69,8713	19,64215
BSPPsychological Resilience Score	202	7	35	26,9851	7,87494
BSPPhysical Strength and Performance Score	202	6	30	23,1733	6,83746
BSP Motivation Score	202	5	25	19,7129	5,68377
Total Score During Sportive Practice	202	18	90	70,2475	19,78713
DSPPsychological Resilience Score	202	7	35	26,8119	8,0443
DSPPhysical Strength and Performance Score	202	6	30	23,3515	6,90664
DSPMotivation Score	202	5	25	20,0842	5,58853
Total Score After Sportive Practice	202	19	90	68,1832	20,2079
ASPPsychological Resilience Score	202	8	40	30,495	9,08021
ASPPhysical Strength and Performance Score	202	6	30	22,5594	6,9889
ASPMotivation Score	202	5	25	19,0248	5,89834
N	202				

As seen in Table 3, the effect of the music (Arithmetic Average 69.8713) that individuals listen to before the sportive practices is high. The effect of the music they listen to on the psychological resilience of individuals before the sportive practices (Arithmetic Avg.:26,9851) is high. The effect of the music they listen to on their physical strength and performance before the sportive practices (Arithmetic Avg. 23,1733) is high. The effect of the music they listen to on their motivation before the sportive practices (Arithmetic Ord.19,7129) is high. The effect of the music that individuals listen to during sportive practices (Arithmetic Average 70,2475) is at a high level. The effect of the music they listen to on the psychological resilience of individuals during sportive practices (Arithmetic Avg.26,8119) is high. The effect of the music they listen to on their physical strength and performance during sportive practices (Arithmetic Avg.: 23,3515) is high. The effect of the music they listen to on their motivation during sportive practices (Arithmetic Avg. 20,0842) is at a high level. The effect of the music that individuals listen to after sportive practices (Arithmetic Avg. 68,1832) is at a high level. The effect of the music they listen to on the psychological resilience of individuals after sportive practices (Arithmetic Avg. 30,495) is at a very high level. The effect of the music they listen to on their physical strength and performance (Arithmetic Avg. 22,5594) after sportive practices is at a high level. The effect of the music they listen to on their motivation after the sportive practices (Arithmetic Ort.19,0248) is high. According to the results obtained, it can be said that individuals' listening to music before, during, and after the sportive practice has a predominantly positive effect on their performance.

Table 4. *Mann Whitney-U Test on the Difference between the Gender of Individuals and the Levels of the Effect of Music in Sportive Practices*

	Gender	N	Mean Rank	Mann-Whitney U	P
BSP Total	Male	102	96,75	4615	0,239
	Female	100	106,35		
	Total	202			
DSP Total	Male	102	95	4436,5	0,107
	Female	100	108,14		
	Total	202			
ASP Total	Male	102	95,9	4528,5	0,167
	Female	100	107,22		
	Total	202			
ASP Motivation	Male	102	92,78	4211	0,03
	Female	100	110,39		
	Total	202			

As seen in Table 4, there is no significant difference between the genders of the individuals and the effect levels of the music they listened to before the sportive practice on the sportive activity ($p>0.05$). There is no significant difference between the genders of the individuals and the effect levels of the music they listen to during the sportive practice on the sportive activity ($p>0.05$). There is no significant difference between the genders of the individuals and the effects of the music they listen to after the sportive practice on the sportive activity ($p>0.05$). There is a significant difference between the gender of the individuals and the motivation sub-dimension of the effect of the music they listen to after the sportive activity on the sportive activity ($p<0.05$). Female individuals are more motivated than male individuals.

Table 5. *Kruskal Wallis Test Regarding the Difference between the Sports Branches of the Individuals and the Effect Levels of Music in Sportive practices*

	Sports Branch	N	MeanRank	X^2	sd	p
BSP Total	Fitness	12	87,92	7,965	4	0,093
	Volleyball	40	75,99			
	Swimming	30	79,5			
	Tennis	12	69,54			
	Football	48	59,15			
	Total	142				
BSPpsychological resilience	Fitness	12	88,92	11,314	4	0,023*
	Volleyball	40	77,21			
	Swimming	30	81,75			
	Tennis	12	68,63			
	Football	48	56,7			
	Total	142				
BSPphysical strength and performance	Fitness	12	81,33	6,061	4	0,195
	Volleyball	40	73,54			

	Swimming	30	82,17			
	Tennis	12	70,08			
	Football	48	61,03			
	Total	142				
BSP Motivation	Fitness	12	90,46	8,267	4	0,082
	Volleyball	40	77,18			
	Swimming	30	76,43			
	Tennis	12	70,63			
	Football	48	59,17			
	Total	142				
DSP Total	Fitness	12	91,58	8,803	4	0,066
	Volleyball	40	77,44			
	Swimming	30	77,42			
	Tennis	12	64,96			
	Football	48	59,47			
	Total	142				
DSPpsychological resilience	Fitness	12	87,46	10,056	4	0,039*
	Volleyball	40	78,79			
	Swimming	30	80,02			
	Tennis	12	63,13			
	Football	48	58,21			
	Total	142				
DSP physical strength and performance	Fitness	12	88,25	7,046	4	0,133
	Volleyball	40	75,88			
	Swimming	30	~~78,8~~			
	Tennis	12	63,54			
	Football	48	61,09			
	Total	142				
DSP Motivation	Fitness	12	91,88	8,847	4	0,065
	Volleyball	40	78,25			
	Swimming	30	74,63			
	Tennis	12	70,46			
	Football	48	59,08			
	Total	142				
ASP Total	Fitness	12	82,42	7,052	4	0,133
	Volleyball	40	75,89			
	Swimming	30	79,85			
	Tennis	12	74,79			
	Football	48	59,07			
	Total	142				
ASPpsychological resilience	Fitness	12	83,5	9,015	4	0,061
	Volleyball	40	76,86			
	Swimming	30	81,03			
	Tennis	12	73,63			
	Football	48	57,54			
	Total	142				
ASPphysical strength and performance	Fitness	12	76,79	4,805	4	0,308
	Volleyball	40	74,5			
	Swimming	30	80,37			
	Tennis	12	74,21			
	Football	48	61,46			
	Total	142				
ASP Motivation	Fitness	12	85,33	7,589	4	0,108

Volleyball	40	76,3
Swimming	30	77,43
Tennis	12	77,92
Football	48	58,73
Total	142	

As seen in Table 5, there is a difference between the effects of individuals' listening to music before the sportive practice on their psychological resilience levels and their branches ($p<0.05$). The effect of music on the psychological resilience levels of individuals engaged in fitness and swimming is higher than those engaged in other sports branches. The effect of music on the psychological resilience levels of individuals engaged in football and tennis is lower than those engaged in other sports branches. There is a difference between the effects of individuals' listening to music during sportive practice on their psychological resilience levels and their branches ($p<0.05$). The level of psychological resilience of individuals engaged in fitness and swimming is higher than those engaged in other sports branches. The effect of music on the psychological resilience levels of individuals engaged in football and tennis is lower than those engaged in other sports branches. Music does not make a difference on other variables ($p>0.05$).

Table 6. *Friedman Test on the Difference Between the Music They Listened Before the Sportive Practice, the Music They Listened During the Sportive Practice and the Music They Listened After the Sportive Practice on the Individuals' Positive Effects on their Sportive Practice*

Friedman Test	N	Mean	Std. Deviation	X^2	sd	p
BSP Total	202	69,8713	19,64215	23,584	2	0,000
DSPTotal	202	70,2475	19,78713			
ASPTotal	202	68,1832	20,2079			

($p<0,005$)

As seen in Table 6, there is a significant difference between the positive effects of the music they listen to before the sportive practice, the music they listen to during the sportive practice, and the music they listen to after the sportive practice ($p<0.005$).

Table 7. *The Friedman Test on the Difference between the Positive Effects of the Music They Listen to Before the Sportive Practice, the Music They Listen to During the Sportive Practice, and the Music They Listen to After the Sportive Practice on the Psychological Resilience of the Individuals*

Friedman Test	N	Mean	Std. Deviation	X^2	sd	p
BSPpsychological resilience	202	26,9851	7,87494	234,997	2	0,000
DSPpsychological resilience	202	26,8119	8,0443			
ASP psychological resilience	202	30,495	9,08021			

(p<0,005)

As seen in Table 7, there is a significant difference between the positive effects of the music they listen to before the sportive practice, the music they listen to during the sportive practice, and the music they listen to after the sportive practice on the psychological resilience of the individuals (p<0.005).

Table 8. *Friedman Test Regarding the Difference between the Positive Effects of the Music They Listen to Before the Sports Practice, the Music They Listen During the Sports Practice and the Music They Listen After the Sports Practice on the Physical Strength and Performance of the Individuals*

Friedman Test	N	Mean	Std. Deviation	X2	sd	p
BSPphysical strength and performance	202	23,1733	6,83746	18,123	2	0,000
DSP physical strength and performance	202	23,3515	6,90664			
ASP physical strength and performance	202	22,5594	6,9889			

(p<0,005)

As seen in Table 8, there is a significant difference between the positive effects of the music they listen to before the sportive practice, the music they listen to during the sportive practice, and the music they listen to after the sportive practice on the physical strength and performance of the individuals (p<0.005).

Table 9. *Friedman Test Regarding the Difference between the Music They Listened Before the Sportive Practice, the Music They Listened During the Sportive Practice, and the Positive Effects of the Music They Listened After the Sportive Practice on the Motivation of the Individuals*

Friedman Test	N	Mean	Std. Deviation	X^2	sd	p
BSP Motivation	202	19,7129	5,68377	29,073	2	0,000
DSP Motivation	202	20,0842	5,58853			
ASP Motivation	202	19,0248	5,89834			

(p<0,005)

As seen in Table 9, there is a significant difference between the positive effects of the music they listen to before the sportive practice, the music they listen to during the sportive practice, and the music they listen to after the sportive practice on the motivation of the individuals to do the sportive practice (p<0.005).

Table 10. *Kruskal Wallis Test Regarding the Difference between the Sports Branches of the Individuals and the Positive Effect Levels of Music in Sportive practices*

	Music Genre	N	Mean Rank	X^2	sd	p
BSP Total	Rap	57	104,53	7,4	6	0,285
	Rock	27	122,48			
	Pop	45	93,58			
	Jazz	7	116			
	Turkish Classical Music	10	89,05			
	Arabesque	23	84,52			
	Alternative Music	33	102,44			
	Total	202				
DSP Total	Rap	57	100,61	9,274	6	0,159
	Rock	27	126,7			
	Pop	45	97,78			
	Jazz	7	112,86			
	Turkish Classical Music	10	88,25			
	Arabesque	23	80,15			
	Alternative Music	33	103,98			
	Total	202				
ASP Motivation	Rap	57	104,46	12,69	6	0,048
	Rock	27	123,93			
	Pop	45	95,52			
	Jazz	7	113,29			
	Turkish Classical Music	10	70,4			
	Arabesque	23	77,22			
	Alternative Music	33	110,03			
	Total	202				

As seen in Table 10, there is no significant difference between the types of music that individuals listen to before the sportive practice and the positive effect of the music they listen to on their sportive performance (p>0.05).There is no significant difference between the types of music that individuals listen to during sportive practice and the positive effect of the music they listen to on their sportive performance (p>0.05). There is a significant difference between the types of music that individuals listen to after the sportive practice and the positive effect of the music they listen to on their sportive performance (p<0.05).

Table 11. *Kruskal Wallis Test Regarding the Difference between the Frequency of Individuals Listening to Music and the Levels of Positive Effects of Music in Sportive practices*

	Frequency of Listening to Music	N	Mean Rank	X^2	sd	p
BSP Total	Always	134	107,67	11,118	2	0,004
	Sometimes	62	94,97			
	Rarely	6	31,17			
	Total	202				
DSP Total	Always	134	108,85	10,128	2	0,006
	Sometimes	62	91,23			
	Rarely	6	43,42			
	Total	202				
ASP Total	Always	134	113,48	21,501	2	0,000
	Sometimes	62	82,44			
	Rarely	6	30,92			
	Total	202				

As seen in Table 11, there is a significant difference between the frequency of individuals listening to music before the sportive practice and the positive effect of music on their sportive performance (p<0.05). There is a significant difference between the frequency of individuals listening to music during sportive practice and the positive effect of music on sportive performance (p<0.05). There is a significant difference between the frequency of individuals listening to music after the sportive practice and the positive effect of music on their sportive performance (p<0.05).

DISCUSSION

In accordance with our aim of the study, the effect of the students of the Faculty of Sport Sciences listening to music in sportive applications on psychological resilience, physical strength, and performance and motivation before, during, and after the sportive application was evaluated. According to the results obtained, the positive effect of the music they listen to before, during, and after the sportive practices is high. Music helps to distract the mind from feeling

tired and focusing on music, making it possible to exercise for a longer period. Research has revealed that music can change emotional and physiological arousal (Karageorhis et al., 1999) and can help individuals narrow their attention, focus inward, and block distractions (Dorney et al., 1992).

The music that individuals listen to before, during, and after the sportive practice has a positive effect on the sportive practices of the individuals. The positive effect of music BSP, DSP, and ASP is high. However, the most positive effect is provided after the sportive application and then during the sportive application. Music is advocated as a way to increase commitment to physical activity (Clark et. al., 2016; Hutchinson et. al., 2018). The role of music can be particularly beneficial as it has been shown to have a positive effect on emotional valence even at higher physical activity intensities (Bigliassi et all. 2016; Terry et all., 2012). Accordingly, music can help counteract the negative valued emotion typically associated with severe mood swings. From a behavior change perspective, music can establish relationships between physical activity and a positive impact on future decision-making (Williams et. al., 2012).

When this situation is evaluated in terms of the genders of the individuals; only after the sportive practice (ASP) and the motivation dimension were found to be different. In this dimension, female individuals are more motivated by listening to music than male individuals.

There is a difference in terms of sports branches before the sportive practice (BSP) and psychological resilience. Listening to the music of individuals engaged in fitness and swimming positively affects their psychological resilience levels on the surface. This situation continues during the sportive practice (DSP). Another remarkable result is that these values of individuals engaged in individual sports are higher than the values of individuals engaged in team sports. Performance in sports is defined as the physiological, biomechanical, and psychological efficiency of the athlete during the activity (Kuter and Ozturk, 1997). Based on this definition, it can be said that assuming that music prepares individuals psychologically in sportive practices, it supports their inner peace, increases their endurance, and has a positive effect on physical performance. Similar to our study, in a study conducted on swimmers (Smirmaul et al. 2015), it was shown that optional music before the maximal 200-meter free-swimming shortens the swimming time. Lee and Kimmerly (2016) reported in their study that fast tempo music increases the voluntarily selected running speed and heart rate without changing the perceived fatigue in treadmill exercise, and in contrast, low tempo music reduces the recovery heart rate more quickly.

When the difference that occurs in terms of the positive effects of the music that individuals listen to before, during, and after the sportive practice on the psychological resilience of the individuals is analyzed; It has been determined that

the music that individuals listen to has a high positive effect before, during and after the sportive practice. In addition, the music they listen to after the sportive application shows the highest positive effect. (Positive effect order- ASP> BSP> DSP). Performance in sports is defined as the physiological, biomechanical, and psychological efficiency of the athlete during the activity (Kuter and Ozturk, 1997). Based on this definition, it can be said that assuming that music prepares individuals psychologically in sportive practices, it supports their inner peace, increases their endurance, and has a positive effect on physical performance. Similar to our study, in a study conducted on swimmers (Smirmaul et al., 2015), it was found that optional music before the maximal 200-meter free-swimming shortened the swimming time. Lee and Kimmerly (2016) reported in their study that fast tempo music increases the voluntarily selected running speed and heart rate without changing the perceived fatigue in treadmill exercise, and in contrast, low tempo music reduces the recovery heart rate more quickly. Unlike the studies on this subject, the music listened to after the sportive practice (SUS) in our study affects the psychological resilience of individuals more positively.

When the difference in the positive effects of the music that individuals listen to before, during, and after the sportive practice is analyzed in terms of the positive effects on the physical strength and performance of the individuals, it has been determined that the music that the individuals listen to has a high positive effect before, during and after the sportive practice. In addition, the music they listen to after the sportive application shows the highest positive effect (Positive effect order-ASP> DSP> BSP). Music is advocated as a way to increase commitment to physical activity (Clark et. al., 2016; Hutchinson et al., 2018). The role of music can be particularly beneficial as it has been shown to have a positive effect on emotional valence even at higher physical activity intensities (Bigliassi et all., 2016; Terry et all., 2012). In the related literature, the study supporting our finding was conducted by Williams et al. According to them, the music listened to after the sportive practice can help counteract the negative valued emotion typically associated with severe mood swings. Changing the interpretations of physical activity or heavy physical activity towards positive, from the perspective of behavior change; music can establish relationships between physical activity and a positive impact that affects future decision-making processes (Williams et al., 2012).

When the difference in the positive effects of the music they listen to before, during, and after the sportive practice is analyzed, it has been determined that the music they listen to has a high positive effect before, during, and after the sportive practice. In addition, the music they listen to during the sportive practice shows the highest positive effect (Positive effect order-DSP> BSP> ASP). In the study conducted by (Elliott et al. 2005, Hutchinson et al. 2011, Sezer 2011), which is similar to our study findings; It has been suggested that music has an effect on a

20-minute submaximal cycle task, asynchronous motivational music has an effect on supramaximal exercises, and the participants are positively affected by music, their motivation levels increase, and it has a positive effect on anaerobic performances. In the study conducted by (Carty et. al.,, 1998), it was determined that well-chosen music increases the positive aspects of mood such as vigor and excitement, while it reduces negative aspects such as tension and fatigue. As a result of his work; (Sezer 2011) stated that music can attract attention, cheer up the soul, create emotion, change or regulate our mood, revive memories, increase working efficiency, reduce slowdown and encourage rhythmic movement. (Karageorghis and Terry 1997) According to sports psychologist Costas Karageorghis, music makes you feel less tired by playing your brain during a workout, music has calming and stimulating effects, and one of the best ways to balance your mood is to listen to music; it reduces negative emotions such as tension, depression, and anger; It has been shown that it can increase positive emotions such as enthusiasm, happiness, and excitement (Karageorghis 2014). He examined the multifaceted effects of music listened to during exercise and it was shown that music is beneficial for recovery. Music provides faster physiological recovery after exercise by regulating the respiratory rhythm depending on the tempo of the music (Jones 2016).

When the difference in the positive effects of the music genres that individuals listen to before, during, and after the sportive practice is analyzed; There is no significant difference between the types of music they listen to before and during the sportive application. In addition, there is a difference after the sportive application. Rock, alternative music, and rap provide the most positive effects, respectively. Similar to our findings (Kazokoglu, 2008), a study conducted by sports psychologist Costas Karageorghis with runners revealed that running performance can be increased up to 20% by listening to pop, rock, or even classical music. In another study, it was carried out to reveal the effects of different kinds of music on the physiology of perception and relaxation values. According to the study analysis, it was revealed that while there was an increase in the skin temperature of all groups under all conditions, those who listened to classical music and calming music were more relaxed than those who listened to rock music (Burns - Labbe - Williams - McCall, 1999). Blažević et al. (2015) made students listen to Pop, Jazz, Soul, Blues, Classical Music, and Rock music during the exercises and found that the music genre preferences had an equal effect on pilates exercise. It has been stated that students prefer these preferences within the culture they belong to and adopt, and students feel more motivated to exercise and continue while listening to music during the exercises (Sezer 2009, Sezer 2013). When the studies are examined, it is stated that the music that individuals listen to in daily life has an effect on their well-being, and the main factor is the type of music. Not

only the tempo of the music but also the preferred type of music can be effective on the performance. In a recent study conducted in COPD (Chronic obstructive pulmonary disease) patients, it was reported that listening to music preferred during high-intensity endurance exercise increases the running time and reduces the occurrence of dyspnea after exercise (Lee et al., 2017). Hawthorne and experimenter effects are more likely to occur in studies using the music of his choosing (Karageorghis & Priest, 2012).

When the difference in the positive effects of the frequency of listening to music before, during, and after the sportive practice is analyzed, listening to music all the time before, during, and after the sportive practice has a more positive effect than the occasional and seldom listening to music in terms of the frequency of listening to music. On the other hand, individuals who always listen to music after the sportive application are affected more positively than before and after the sportive application. In their study, Saarikallio and Erkkilä suggested that individuals should listen to music frequently to regulate their emotions and provide comfort during sports practice (Saarikallio and Erkkilä, 2007). According to this theoretical framework, listening to music before, during, and after the sportive practice can help both to increase or maintain positive emotions and to reduce or cope with negative emotions.

CONCLUSION

According to the results of the research, it was understood that the music that the individuals in our research group listened to before, during, and after the sportive application had a positive effect on their psychological resilience, and physical strength and motivation before the sportive application. It was understood that the gender of the individuals and the effect of the music they listened after the sportive practice on the sportive activity had a significant effect on the motivation level. Accordingly, it can be said that female individuals are more motivated than male individuals and that music increases the “willingness to work” and “desire to achieve success with music” in women. The effect of music on the psychological resilience levels of individuals doing fitness and swimming is higher than those dealing with other sports branches. It can be said that music, in particular, helps individuals who are engaged in fitness and swimming, to get away from stress and negative emotions more than individuals who deal with other branches and to increase working efficiency and performance. It can be said that the music genres that individuals listen to after the sportive practice and the rock music they prefer within the culture they belong to and adopt, astonishing, reacting, and louder, helps individuals to get rid of fear, sadness, and anxiety and to be better motivated to work. It can be said that the music that individuals listen to

frequently in sportive practices, evaluates the past activities of individuals, removes them from negative feelings and thoughts, helps them feel stronger, and helps them feel stronger in physical activities by making a positive contribution to hormonal balance.

REFERENCES

1) Altun Akbaba, S., & Buyukozturk, S. (2011). Degisim egilimleri olceginin gelistirilmesi. Kalem Egitim ve İnsan Bilimleri Dergisi, 1(1), 73-90.
2) Arshel, M. & Marris, D. (1978), Effects of music and rhythm on physical performance. Research quarterly, s. 49, 109-113.
3) Artemiz B. (2009). Ergenlerin farkli muzik turlerine iliskin ilgileri ile kisilik ozellikleri arasindaki iliskinin incelenmesi. Yuksek lisans tezi. Maltepe Universitesi Sosyal Bilimler Enstitusu, Psikoloji Anabilim Dali Klinik Psikoloji.
4) Baydag C. Malkoc T. (2013). Gorme Engelli Bireylerin Sosyallesme Surecinde Verilen Muzik Egitiminin, Muzikal Motivasyon, Muziksel Ilgi ve Muzik Yasantilarina Etkisi. Uluslararasi Muzik ve Sahne Sanatlari Sempozyumu Bildiriler Kitabi 24-26 Eylul, Zonguldak.
5) Belgin, E. (2014). Muzik Ve Beyin (Makam, Ritim Bileskesi, Algi Ve Duygu Etkileri). Yeni Turkiye Dergisi (Ozel Sayi), 10(57), 1346-1348.
6) Bigliassi, M., Karageorghis, C.I., Nowicy, A.V., Orgs, G., & Wright, M.J. (2016). Yorucu bir izometrik ayak bilegi-dorsifleksiyon gorevi sirasinda muzigin etkilerinin altinda yatan serebral mekanizmalar. Psikofizyoloji, 53, 1472-1483. https://doi.org/10.1111/psyp.12693
7) Bingol, E. and Bayansalduz, M. (2016). Evaluating the Level of Exercise Dependence and Psychological Resilience of Athletes from Different Branches. The Anthropologist, 24:3, 827-835, DOI: 10.1080/09720073.2016.11892079
8) Blažević, I. et al.: The efficiency of exercising pilates to different music genres. Sport Science 8 (2015) Suppl 2: 16-25.
9) Brotons M, Koger S.M. (2000). The impact of music therapy on language functioning in dementia. J Music Ther, 37:183-195.
10) Carty R, Barrison Choplin B, Atkinson M. The effects of different types of music on mood, tension, and metal clarity. Alternat Ther 1998; 4: 1.
11) Clark, I.N., Baker, F.A. and Taylor, N.F. (2016). Muzik dinlemenin yetiskinlerde saglikla ilgili egzersiz ve fiziksel aktivite uzerindeki module edici etkileri: Sistematik bir inceleme ve anlati sentezi. NordicJournal of Music Therapy, 25, 76-104. https://doi.org/10.1080/08098131.2015.1008558
12) Cronbach, L.J. (1984). Psikolojik Testin Temelleri (4. Baski). New York: Harper and Row Yayinlari.

13) Dogan, A.A. (1998), Fon Muziginin Esneklik Calismalarinin Verimliligi Uzerine Etkisi, Yayinlanmamis Yuksek Lisans Tezi, Trabzon: Karadeniz Teknik Universitesi, Saglik Bilimleri Enstitusu, s. 68.
14) Dorney L, GohEKM. and Lee C. The impact of music and imagery on physical performance and arousal states; studies of coordination and endurance. J Behav 1992; 15: 21-33.
15) Ekici, S. (2014). Turk Muziginde Makamlar Ve Tedavi. Yeni Turkiye Dergisi (Ozel Sayi). 10(57), 1361-1369.
16) Erdal, G. (2005), Sporda performansin arttirilmasinda muzigin etkisi, IV.Ulusal Beden Egitimi ve Spor Ogretmenligi Sempozyumu, 10-11 Haziran, Bursa, s.1-8.
17) Erten O. Muzik dinleyerek okumanin okudugunu anlama uzerindeki etkisi. Yuksek lisans tezi. Abant Izzet Baysal Universitesi Sosyal Bilimler Enstitusu Guzel Sanatlar Anabilim Dali, 2011.
18) Gencel, O. (2006). Muzikle Tedavi. Balikesir Universitesi Necatibey Egitim Fakultesi Guzel Sanatlar Egitimi Bolumu, Muzik Egitimi Ana Bilim Dali, Kastamonu Egitim Dergisi, 14(2) 697-706.
19) Goleman, D. (1998). Isbasinda Duygusal Zekâ. Istanbul: Varlik Yayinlari.
20) Goktepe A.K. Dinî icerikli muzik terapinin universite ogrencilerinde duygu durumu, kaygi ve algilanan stres duzeyi uzerindeki etkisi. Doktora tezi. Marmara Universitesi Sosyal Bilimler Enstitusu Felsefe ve Din Bilimleri Anabilim Dali, 2018.
21) Guvenc R.O. Turklerde ve Dunyada muzikle ruhu tedavinin tarihcesi ve gunumuzdeki durumu. Doktora Tezi. Istanbul Universitesi, 1985.
22) Guvenc, R.O. (2014). Eski Turklerde Muzik Ile Tedavi. Yeni Turkiye Dergisi (Ozel Sayi), 10(57), 1327-1337.
23) Hutchinson, J.C., Jones, L., Vitti, S.N., Moore, A., Dalton, P.C., &O'Neill, B.J. (2018). Kendi sectigi muzigin, kosu bandi kosusu sirasinda duygulanim tarafindan duzenlenen egzersiz yogunlugu ve hatirlanan zevk uzerindeki etkisi. Spor, Egzersiz ve Performans Psikolojisi, 7, 80-92. https://doi.org/10.1037/spy0000115
24) Hutchinson, J.C., Sherman, T., Davis, L.K., Cawthon, D., Reeder, N.B. ve Ten enbaum, G. 2011. Eszamansiz motivasyonel muzigin bir supramaksimal egzersiz maci uzerindeki etkisi. *Uluslararasi Spor Psikolojisi Dergisi*, 41: 135-148.
25) Burns J., E Labbé, K. Williams, J. McCall. Perceived and physiological indicators of relaxation: as different as Mozart and Alice in chains, Clinical Trial Appl Psychophysiol Biofeedback 1999 Sep;24(3). PMID: 10652638 DOI: 10.1023/a:1023488614364

26) Jones, J., Berstecher, M., Parks, A., Mullen, S., Brennan, K., Forlenza, S., & Sanders, J. (2016). The effect of headphones versus room music on aerobic performance [Abstract]. International Journal of Exercise Science: Conference Proceedings, 9, 55. Retrieved from https://digital commons. wku.edu/ijes/
27) Karageorghis, C.I., Terry, P.C. (1997). The Psychophysical Effects of Music in Sport and Exercise: A Review. Journal of Sport Behavior, 20: 54-68.
28) Karageorghis, C.I. (2008) 'Spor ve Egzersizde Muzigin Bilimsel Uygulamasi', A.M. Lane (ed.) Spor ve Egzersiz Psikolojisi, s. 109 - 37. Londra: Hodder Egitimi.
29) Karageorghis, C.I., & Priest, D.L. (2012b). Egzersiz alaninda muzik: Bir inceleme ve sentez (Bolum II). Uluslararasi Spor ve Egzersiz Psikolojisi Incelemesi, 5, 67-84.
30) Karasar, N. (1999a). Bilimsel Arastirma Yontemi. Nobel Yayin Dagitim, 9.basim, Ankara.
31) Karayol, M., Turhan, M.O. (2020). Impact of music in sportive activities scale (IMSAS): Validity and Reliability Assessment. African Educational Research Journal, 8(2).
32) Karharman, A. and Bayansalduz, M. (2020). Investigation of the effect of positive perception and mental toughness levels on the motivation of success in elite mountain running athletes. Acta Scientiae et Intellectus, 6;2:7-17.
33) Kazokoglu C. (2008). Spor yaparken muzik dinlemeli mi? http://www.mtbtr.com/gezi_yayin/yayin.asp?kayitno=1212 (Erisim: 08 Subat, 2019).
34) Kloubec, J. (2010). Pilates for improvement of muscle endurance, flexibility, balance and posture. Journal of Strength and Conditioning Research, 24(3): 661-667.
35) Knight, W.E. and Rickard, N.S. (2001). 'Relaxing Music Prevents Stress-Induced Increases in Subjective Anxiety, Systolic Blood Pressure, andHeart Rate in Healthy Malesand Females', Journal of Music Therapy 38(4): 254-72.
36) Koc, H., Curtseit, T., Mamak, H. (2011). Submaksimal Efor Sirasinda Farkli Tip Muzigin Bazi Fizyolojik Parametreler Uzerine Etkisi, Selcuk Universitesi Beden Egitimi Ve Spor Bilimleri Dergisi, 13: 211-215.
37) Kuter, M., Ozturk, F.:Antrenor ve Sporcu El Kitabi, Bursa Gazetecilik ve Yayincilik A.S. Matbaasi, 1997, Bursa, s.17
38) Kucukahmet, L., Ataman, A., Kulahoglu, S.O., Calik, T. Altintas, E., Ozkilic, R., Saritas, M., Ercan, L., Cakmak, M., Kosar, E., (2003). Sinif Yonetiminde Yeni Yaklasimlar. (Ucuncu Baski). Ankara: Nobel Yayin Dagitim.

39) Lee S.K. (2016). Influence of music on maximal self-pacedrunning performance and passive post-exercise recovery rate. J Sports Med Phys Fitness. 56(1-2):39-48.
40) Lee, K. Ahn, H.Y., Kwon, S. (2017). Music's Effect on Exercise Participants by Exercise Session. Journal of Applied Sport Psychology 29 (2), 167-180.
41) Lok, N., Bademli, K. (2016). Alzheimer Hastalarinda Muzik Terapinin Etkinligi: Sistematik Derleme. Psikiyatride Guncel Yaklasimlar-Current Approaches in Psychiatry 2016.
42) Marshall, O. W. andTomcala, M. (1981). Effects of DifferentGenres of Music on Stress Levels, English Document (Ed) 13, p. 13.
43) Masten, A.S., Best, K. and Garmezy, N. (1990). Resilience and Development: Contributions from the Study of Children Who Overcome Adversity. Development and Psychopathology, 2(4), 425-444.
44) Mavi, S., 2012. Hizli Tempo Muzigin Tekvandocular Uzerindeki Etkileri. Yuksek Lisans Tezi. Ankara.
45) Meeks, J., & Hergeden, R. (2002). Music enhances the performance of but not recovery from a non-aerobic exercise. Department of Psychology Sydney College (2002).
46) Miljević-Ridički, R., Plantak, K., Bouillet, D. (2017). Resilience in Preschool Children-The Perspectives of Teachers, Parents, and Children. International Journal of Emotional Education, 9(2), 31-43.
47) Ozdemir, G. & Yildiz, G. (2010). Genel gelisim surecinde muziksel gelisim. Mehmet Akif Ersoy Universitesi Sosyal Bilimler Enstitusu Dergisi, (2), 77-90.
48) Ridder H.M., Gummesen E. (2015). The use of extemporizing in music therapy to facilitate communication in a person with dementia: an explorative case study. Australian Journal of Music Therapy, 26:12-25.
49) Saarikallio, S., Erkkila, J. (2007). Ergenlerin duygudurum duzenlemesinde muzigin rolu. Muzik Psikolojisi, 35, 88-109.
50) Sezer F. Muzikle Terapinin Sinav Kaygisi, Ofke ve Psikolojik Belirtiler Uzerindeki Etkisi, Doktora tezi, Ataturk Universitesi Sosyal Bilimler Enstitusu, 2009.
51) Sezer F. (2011). Ofke ve Psikolojik Belirtiler Uzerine Muzigin Etkisi. Uluslar arasi Insan Bilimleri Dergisi. 2011; 8(1): 1472-1493.
52) Sezer F. Psikolojik iyi olma durumu uzerine etkili faktorler. Education Sciences, 2013: 8(4), 489-504.
53) Sime W. & Thomas, A. (2000). Helping Athletes Find Their Zone of excellence. Ph.D.Draft Submitted for Publication.
54) Smirmaul, B.P., Dos Santos R.V., Da Silva Neto, L.V. (2015). Pre-task music improves swimming performance. J Sports MedPhysFitness, 55(12):1445-51.

55) Somakci P. (2003). Turklerde muzikle tedavi. Sosyal Bilimler Enstitusu Dergisi. 2 (15): 131-140. http://dergipark.gov.tr/download/article-file/219262 (Erisim: 08 Subat, 2019).
56) Stevens, M.J., Lane, A.M. (2001). Mood-Regulating Strategies Used By Athletes, Athletic Inside, The Online Journal Of Sport Psychology, 3: 3-10.
57) Szmedra, L., Bacharach, D.W. (1998). Effect of Music on Perceived Exertion, Plasma Lactate, Norepinephrine and Cardiovascular Hemodynamics during Treadmill Running. International Journal of Sports Medicine, 19: 32-37.
58) Terry, P.C., Karageorghis, C.I., Saha, A.M., &D'Auria, S. (2012). Seckin triatletler arasinda kosu bandinda senkron muzigin etkisi. Sporda Bilim ve Tip Dergisi, 15, 52-57. https://doi.org/10.1016/j.jsams.2011.06.003
59) Ucan, A. (1994) "Insan Ve Muzik, Insan Ve Sanat Egitimi" Ankara, Muzik Ansiklopedisi Yayinlari.
60) Williams, D.M., Dunsiger, S., Jennings, E.G., & Marcus, B.H. (2012). 10 dakikalik bir yuruyus sirasinda ve hemen sonrasindaki duygusal degerlik, eszamanli ve gelecekteki fiziksel aktiviteyi tahmin ediyor mu? Annals of Behavioral Medicine, 44, 43-51. https://doi.org/10.1007/s12160-012-9362-9
61) Wilson, C.V., & Aiken, L.S. (1977). The Effect of Intensity Levels upon Physiological and Subjective Affective Response to Rock Music. Journal of Music Therapy, 14, 60-76.
62) Yalcin, S. (1991). Personel Yonetimi. 4. Bs. Istanbul: I.U. Isletme Fakultesi.
63) Zembat, R., Mertoglu, E. & Jeongsuk, C. (2010). 5-6 Yas cocuklarina yonelik hazirlanan ritm egitimi programinin cocukta ritm duyusunun gelisimine etkisinin incelenmesi. Kastamonu Egitim Dergisi, 18(1), 47-60.